

‘Northern’ Winter Wheat

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Northern is a hard red winter wheat developed by the Montana Agricultural Experiment Station and released to growers in fall 2015. Northern was named to commemorate the 100th anniversary of the Northern Agricultural Research Center (NARC) in Havre, Montana. Northern is derived from a cross between a Yellowstone sib line (MT9982) and hard white winter Montana (MTW0072) and Nebraska (NW97S151) experimental lines. Northern is a medium-late maturing, medium-short statured wheat, with white chaff. Northern has average yield (similar to Yellowstone and Colter, see Table 1), average test weight, and average protein (Table 2). Northern is resistant to both stem and stripe rust. Northern has above average milling and average baking properties (Table 3.) Northern is a low PPO cultivar with favorable Asian noodle color stability and noodle score. To be sold by variety name only as a class of certified seed. Montana State University Research Fees due on seed sold. PVP, Title V is pending (Certificate# 20160092).

Table 1. Yield of Northern vs. a set of recommended varieties, 2011-2016^{1/}

Variety	Districts							All Locations
	1 Kalispell	2 Bozeman	3 Huntley ^{2/}	4 Moccasin ^{3/}	5 Conrad ^{4/}	5 Havre ^{5/}	6- Sidney & Williston	
location-years	6	6	26	23	19	13	9	102
Yellowstone	115.6	92.2	68.7	56.3	81.3	61.7	60.9	71.4
Colter	132.2	89.5	69.0	54.0	77.6	58.8	59.6	70.5
Northern	117.0	87.0	67.8	55.5	78.8	61.5	56.2	69.8
CDC Falcon	70.9	68.6	63.9	51.4	73.6	57.7	57.0	62.7
Decade	44.8	69.9	64.7	52.0	75.2	55.1	54.8	61.3
Jerry	47.5	67.8	59.2	48.7	67.9	49.1	57.1	57.2
LSD (0.05)	18.0	12.0	3.7	2.5	2.7	4.2	ns	2.9

bold = indicates highest value within a column

ns = non-significant

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

1/ = includes 2011-2016 Intrastate and 2013-2016 Off Station tests

2/ includes data from Fort Smith, Hardin area, Hysham Molt, Rapelje

3/ includes data from Belt, Denton, Geraldine, Highwood, Winifred

4/ includes data from Choteau, Cut Bank, The Knees, Shelby

5/ includes data from Ft. Benton, Loma, Turner

Table 2. Agronomic characteristics of Northern vs. a set of recommended varieties, 2011-2016^{1/}

Variety	Test weight lb/bu	Winter survival %	Heading date		Plant height in	Lodging %	Protein %	Sawfly cutting %	Stripe rust %	Coleoptile length in
			Julian	Calendar						
location-years	102	6	54		102	19	99	10	10	2
CDC Falcon	59.0	63	162.2	11-Jun	30.5	18	12.5	16	54	2.9
Colter	59.6	57	164.4	13-Jun	33.8	12	12.7	24	21	2.9
Decade	59.0	61	161.5	11-Jun	32.2	18	12.8	14	71	3.2
Jerry	58.3	67	163.4	12-Jun	36.1	22	12.8	21	75	3.2
Northern	59.4	52	164.6	14-Jun	32.3	16	12.8	10	24	2.5
Yellowstone	59.3	54	163.7	13-Jun	34.0	17	12.4	17	32	2.7
LSD (0.05)	0.4	ns	0.4		0.4	ns	0.2	8	11	0.2

1/ = includes 2011-2016 Intrastate and 2013-2016 Off Station tests

ns = non-significant

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

Table 3. Mill and bake characteristics of Northern vs. a set of recommended varieties, 2011-2015

Variety	PPO ^{1/}	Kernel hardness	Flour			Mixograph			Baking		
			yield %	protein %	Ash %	tolerance (1-6)	mix time min	absorption %	mix time min	absorption %	volume cc
location-years	20	20	20	20	20	20	20	20	20	20	20
Colter	0.273	81.0	67.9	11.2	0.42	5.1	8.9	63.2	17.3	74.5	1028
Decade	0.291	78.2	67.5	11.4	0.41	4.9	8.2	64.0	18.0	74.7	1046
Northern	0.101	88.5	68.7	11.5	0.44	3.6	4.2	61.1	6.0	70.9	1067
Yellowstone	0.210	81.0	68.2	11.0	0.43	4.7	8.3	62.8	15.0	73.7	1049
LSD (0.05)	0.029	2.5	0.5	0.3	0.01	0.4	0.9	0.9	2.0	0.9	27

bold = indicates highest value within a column

bold = indicates varieties with values equal to highest variety within a column based on Fisher's Protected LSD (p =0.05)

1/ polyphenol oxidase, low is best for noodles